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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/765,583 | 01/27/2004 | Thomas L. Toth | GEMS8081.196 | 1715 |

7590 07/07/2005
Ziolkowski Patent Solutions Group, LLC
14135 North Cedarburg Road
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| EXAMINER |
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KAO, CHIH CHENG G

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2882

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/765,583 | TOTH ET AL. | |
| | Examiner | Art Unit | |
| | Chih-Cheng Glen Kao | 2882 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

1. The drawings are objected to because of the following: (equation " $E=R+H-C$ " not corresponding to fig. 18) and (equation " $E=C-R-L$ " not corresponding to fig. 19). The equation " $E=R+H-C$ " is equivalent to $E+C=R+H$. However, as seen in Figure 18, $E+C$ does not equal $R+H$. Likewise, the equation " $E=C-R-L$ " is equivalent to $E+R+L=C$. However, as seen in Figure 19, $E+R+L$ does not equal C .

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 24 and 26 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and lack of antecedent basis problems.

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In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 24, line 1, "the steps of"; replacing "steps" with - -step- -), (claim 26, line 2, "PA"; replacing "PA" with - -projection area (PA)- -), and (claim 26, line 4, "the centroid the subject"; inserting - -of- - after "centroid").

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth (US Patent 5457724) in view of Zhou et al. (US Patent Application Publication 2002/0094064).

4. Regarding claim 1, Toth discloses a method comprising the steps of positioning a subject (fig. 1, #15) in a scanning bay of a medical imaging device (fig. 1, #11), comparing a center of the subject to a reference point (col. 4, lines 30-36 and 59-60), and repositioning the subject in the scanning bay to reduce a difference in position between the center of the subject and the reference point (col. 4, lines 56-60).

However, Toth does not disclose positioning relative to a center of mass.

Zhou et al. teaches positioning relative to a center of mass (paragraph 68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth with the positioning relative to a center of mass of Zhou et al., since one would be motivated to make such a modification to more easily ensure that the object is within the imaging zone (paragraph 68) as implied from Zhou et al.

5. Regarding claim 3, Toth further discloses determining an x-direction and a y-direction centering error of the subject relative to the reference point (col. 4, lines 35-36).

6. Regarding claim 4, Toth further discloses the reference point including one of a center of the medical imaging device and a center of a bore of the medical imaging device (col. 4, line 32).

7. Regarding claim 6, Toth further discloses adjusting an elevation of the subject (col. 4, lines 58-59).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth and Zhou et al. as applied to claim 1 above, and further in view of Grass et al. (US Patent 4578806).

Toth as modified above suggests a method as recited above. Toth further discloses determining a distance of the center of the subject from an isocenter (col. 4, lines 30-36).

However, Toth does not disclose determining from an isocenter of a radiographic energy fan beam.

Grass et al. teaches determining from an isocenter of a radiographic energy fan beam (col. 1, lines 51-63).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the determination from an isocenter of a beam of Grass et al., since one would be motivated to make such a modification to obtain a better image (col. 1, lines 51-63) as implied from Grass et al.

9. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth and Zhou et al. as applied to claim 1, and further in view of Kendrick et al. (US Patent Application Publication 2003/0206614).

10. Regarding claim 5, Toth as modified above suggests a method as recited above.

However, Toth does not specifically disclose automatically performing the steps of positioning, comparing, and repositioning.

Kendrick et al. teaches automatically performing the steps of positioning, comparing, and repositioning (fig. 5, #540 and 545, and paragraph 10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the automatic positioning and repositioning of Kendrick et al., since one would be motivated to make such a modification to reduce human intervention (paragraph 10) as implied from Kendrick et al. and save time during a process.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with automatic steps since broadly providing automatic means to replace manual activity, which has accomplished the

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same result, involves only routine skill in the art. One would be motivated to make such a modification to save time during a process.

11. Regarding claim 11, Toth as modified above suggests a method as recited above. Toth further discloses determining a projection area (fig. 4).

However, Toth does not specifically disclose determining an adjusted projection area from a position of the center after repositioning.

Kendrick et al. teaches adjusting, displaying, and repositioning (fig. 5, #535, 540, and 545).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the adjusting, displaying, and repositioning of Kendrick et al., since one would be motivated to make such a modification to make alignment more accurate (fig. 5) as implied from Kendrick et al.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth with the determining after repositioning, since merely repeating steps of an invention involves only routine skill in the art. One would be motivated to make such a modification to double-check the positioning for accuracy.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth and Zhou et al. as applied to claim 1 above, and further in view of Grass et al. and Kendrick et al.

For purposes of being concise, Toth in view of Zhou et al. and Grass et al. suggests a method as recited above.

However, Toth does not specifically disclose automatically performing an alignment step.

Kendrick et al. teaches automatically performing an alignment step (paragraph 10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the automatic aligning of Kendrick et al., since one would be motivated to make such a modification to reduce human intervention (paragraph 10) as implied from Kendrick et al. and save time during a process.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with automatic aligning since broadly providing automatic means to replace manual activity, which has accomplished the same result, involves only routine skill in the art. One would be motivated to make such a modification to save time during a process.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth and Zhou et al. as applied to claim 1 above, and further in view of Fujimoto et al. (US Patent 5386446) and Hescht et al. (US Patent 5212437).

Toth as modified above suggests a method as recited above.

However, Toth does not disclose adjusting a tube current modulation of a device based on at least the repositioning of the subject.

Fujimoto et al. teaches adjusting an x-ray amount of a device (fig. 5, #65d) based on at least the repositioning of the subject (fig. 5, #65e'). Hescht et al. teaches adjusting tube current modulation (col. 3, lines 11-17).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the adjusting of Fujimoto et al., since one would be motivated to make such a modification for better image resolution (col. 2, lines 35-40) as implied from Fujimoto et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the adjusting of Hescht et al., since one would be motivated to make such a modification for better control of the system (col. 3, lines 11-17) as implied from Hescht et al.

14. Claims 15, 16, 19-21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth in view of Zhou et al. and Li (US Patent 6459755).

15. Regarding claims 15 and 27, Toth discloses a system comprising a rotatable gantry (fig. 1, #12) having a bore centrally disposed therein (fig. 1, #11), a table moveable (fig. 2, #36) within the bore (fig. 1, #11) and configured to position a subject (fig. 1, #15) for tomographic data acquisition (abstract) within the bore, a high frequency electromagnetic energy projection source (fig. 1, #13) positioned within the rotatable gantry (fig. 1, #12) and configured to project high frequency electromagnetic energy toward the subject (fig. 1, #15), a detector array (fig. 1, #16) disposed within the rotatable gantry (fig. 1, #12) and configured to detect high frequency electromagnetic energy projected by the projection source (fig. 1, #13) and impinged on the subject (fig. 1, #15), and a computer (fig. 2, #26), along with determining a center of a subject (col. 3, lines 53-62), determining a value of mis-centering of the center of the subject within a

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medical imaging device (col. 4, lines 30-36), and adjusting a position or elevation of the subject within the imaging device to align the center with a reference position and compensate for the value of mis-centering (col. 4, lines 55-60).

However, Toth does not specifically disclose a computer readable storage medium having stored thereon a computer program representing a set of instructions, which when executed by at least one processor or computer, causes the processor or computer to perform steps, or positioning relative to a centroid.

Li teaches a computer readable storage medium having stored thereon a computer program representing a set of instructions, which when executed by at least one processor or computer, causes the processor or computer to perform steps (claim 9). Zhou et al. teaches positioning relative to a centroid (paragraph 68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the steps and system of Toth with a computer readable storage medium having a program for a computer as taught by Li, since broadly providing automatic means to replace manual activity, which has accomplished the same result, involves only routine skill in the art. One having ordinary skill in the art would be motivated to make such a modification for faster image processing.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Toth with the positioning relative to a centroid of Zhou et al., since one would be motivated to make such a modification to more easily ensure that the object is within the imaging zone (paragraph 68) as implied from Zhou et al.

16. Regarding claim 16, Toth further discloses determining a distance of the center from an isocenter (col. 4, lines 35-36).

17. Regarding claims 19 and 20, Toth further discloses determining a distance of the center from an isocenter and geometrically determining an x-direction and y-direction centering error of the subject relative to a reference point defining a properly centered subject (col. 4, lines 35-36).

18. Regarding claim 21, Toth further discloses adjusting an elevation of the subject based on the value of mis-centering (col. 4, lines 58-59), which would necessarily be within the imaging device due to prior performance of scout scans (abstract).

19. Claims 7-9, 17, 18, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth, Zhou et al., and Li as respectively applied to claims 1, 15, and 27 above, and further in view of Lienard et al. (US Patent Application Publication 2003/0007603).

Toth as modified above suggests a method as recited above. Toth further discloses performing at least one scout scan of the subject (abstract), determining the center of the subject from the at least one scout scan (col. 3, lines 53-62), wherein the at least one scout scan includes at least one of a lateral scout scan and an anterior-posterior scout scan (fig. 4), and determining the center of the subject from at least two scout scans including at least one lateral scout scan and an anterior-posterior scout scan (fig. 4).

However, Toth does not disclose scanning for determining a center of mass.

Lienard et al. teaches scanning for determining a center of mass (paragraph 17).

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It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the scanning of Lienard et al., since one would be motivated to make such a modification to better estimate the distance of the object between components (paragraph 17) as implied from Lienard et al.

20. Claims 22, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth in view of Kendrick et al.

21. Regarding claim 22, Toth discloses a method comprising the steps of positioning a subject (fig. 1, #15) in a scanning bay of a medical imaging device (fig. 1, #11), determining a value of mis-elevation (col. 4, lines 30-36 and 59-60), and adjusting an elevation of the subject to reduce the value of mis-elevation (col. 4, lines 56-60).

However, Toth does not disclose automatically adjusting.

Kendrick et al. teaches automatically adjusting (paragraph 10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth with the automatic adjusting of Kendrick et al., since one would be motivated to make such a modification to reduce human intervention (paragraph 10) as implied from Kendrick et al. and save time during a process.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with automatic aligning since broadly providing automatic means to replace manual activity, which has

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accomplished the same result, involves only routine skill in the art. One would be motivated to make such a modification to save time during a process.

22. Regarding claim 24, Toth further discloses adjusting the elevation of the subject according to a difference between an actual elevation of the subject and a desired elevation of the subject (col. 4, lines 56-60).

23. Regarding claim 25, Toth as modified above suggests a method as recited above. Toth further discloses that mis-centering in a lateral direction will usually be minimal and not require repositioning of the patient (col. 4, lines 60-63).

However, Toth does not specifically disclose adjusting a lateral position of the subject within the medical device.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with adjusting a lateral position, which is explained with motivation as follows. Although Toth discloses that usually lateral repositioning is not required, there are obviously unusual situations that may occur, which would require repositioning in the lateral direction, such as a subject lying on the extreme side of the table. If this unusual situation occurs, it would have been obvious, to one having ordinary skill in the art, to incorporate the method as recited above with repositioning of the patient in the lateral direction, since one would be motivated to make such a modification for optimal images (col. 2, lines 1-2) as implied from Toth.

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24. Claims 13, 14, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth, Zhou et al., and Kendrick et al. as applied to claims 1 and 22 above, and further in view of Kobayashi (US Patent 5577095).

For purposes of being concise, Toth in view of Zhou et al. or Kendrick et al. suggests a method as recited above. Toth further discloses determining the center of the subject from at least one scout scan (fig. 4).

However, Toth does not disclose determining elevation from a sensor assembly disposed approximate a scanning bay or medical imaging device.

Kobayashi teaches determining elevation from a sensor assembly (col. 9, lines 52-60) disposed approximate a scanning bay or medical imaging device (fig. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the determination of Kobayashi, since one would be motivated to make such a modification to measure height easier (col. 9, lines 52-60) as implied from Kobayashi.

25. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth and Kendrick et al. as applied to claim 22 above, and further in view of Zhou et al.

Toth as modified above suggests a method as recited above. Toth further discloses the step of determining a center of the subject and adjusting at least one of a position of the subject to compensate for misalignment between the center of the subject and an isocenter (col. 4, lines 30-36 and 55-60).

However, Toth does not disclose positioning relative to a center of mass.

Zhou et al. teaches positioning relative to a center of mass (paragraph 68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth as modified above with the positioning relative to a center of mass of Zhou et al., since one would be motivated to make such a modification to more easily ensure that the object is within the imaging zone (paragraph 68) as implied from Zhou et al.

26. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth, Zhou et al., and Li as applied to claim 27 above, and further in view of Kendrick et al.

Toth as modified above suggests a system as recited above. Toth further discloses determining a projection area (fig. 4).

However, Toth does not specifically disclose determining an adjusted projection area from a position of the center after repositioning.

Kendrick et al. teaches adjusting, displaying, and repositioning (fig. 5, #535, 540, and 545).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Toth as modified above with the adjusting, displaying, and repositioning of Kendrick et al., since one would be motivated to make such a modification to make alignment more accurate (fig. 5) as implied from Kendrick et al.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the system of Toth with the determining after repositioning,

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since merely repeating steps of an invention involves only routine skill in the art. One would be motivated to make such a modification to double-check the positioning for accuracy.

Response to Arguments

27. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

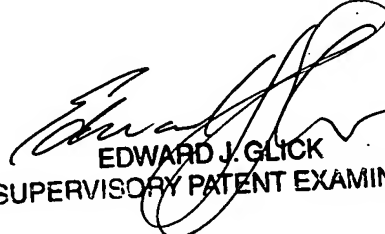
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER

**TITLE: SYSTEM AND METHOD OF DETERMINING A CENTER OF MASS OF AN IMAGING SUBJECT
FOR X-RAY FLUX MANAGEMENT CONTROL**

INVENTOR(S): Toth et al.

S/N: 10765,583

Replacement Sheet 1 of 3

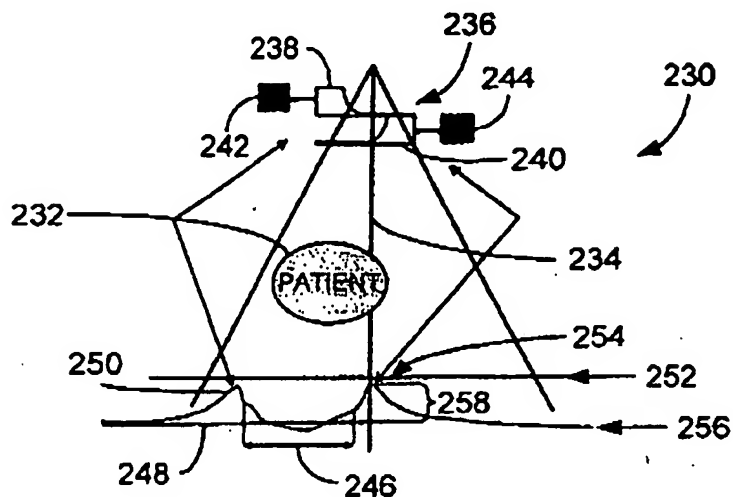


FIG. 10

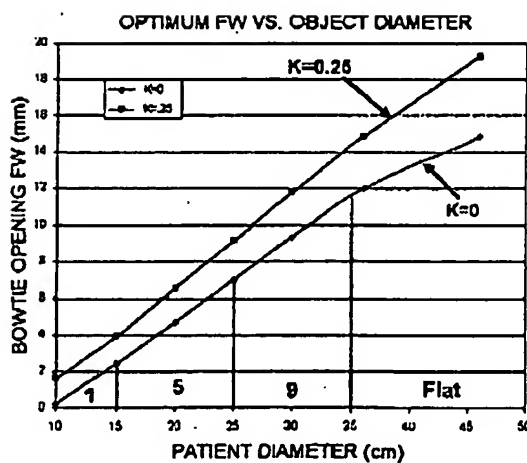


FIG. 12

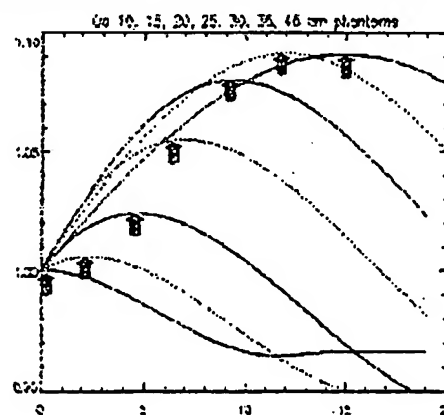


FIG. 13

**TITLE: SYSTEM AND METHOD OF DETERMINING A CENTER OF MASS OF AN IMAGING SUBJECT
FOR X-RAY FLUX MANAGEMENT CONTROL**

INVENTOR(S): Toth et al.

S/N: 10/765,583

Replacement Sheet 2 of 3

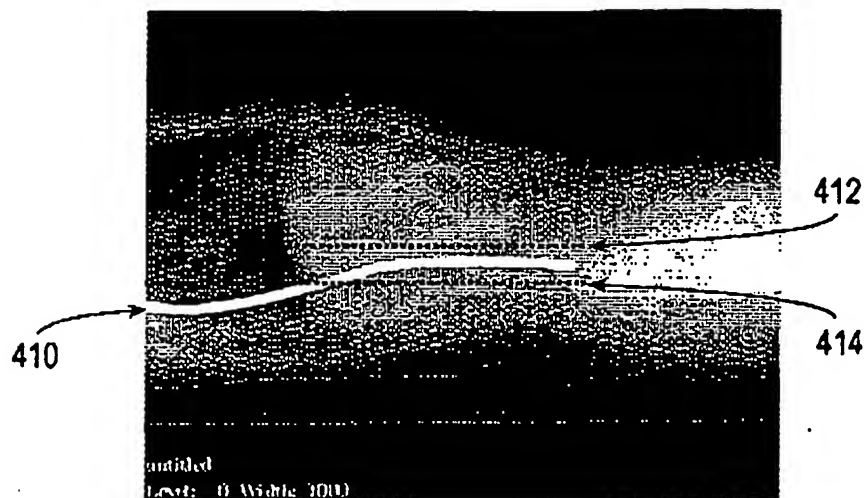


FIG. 14

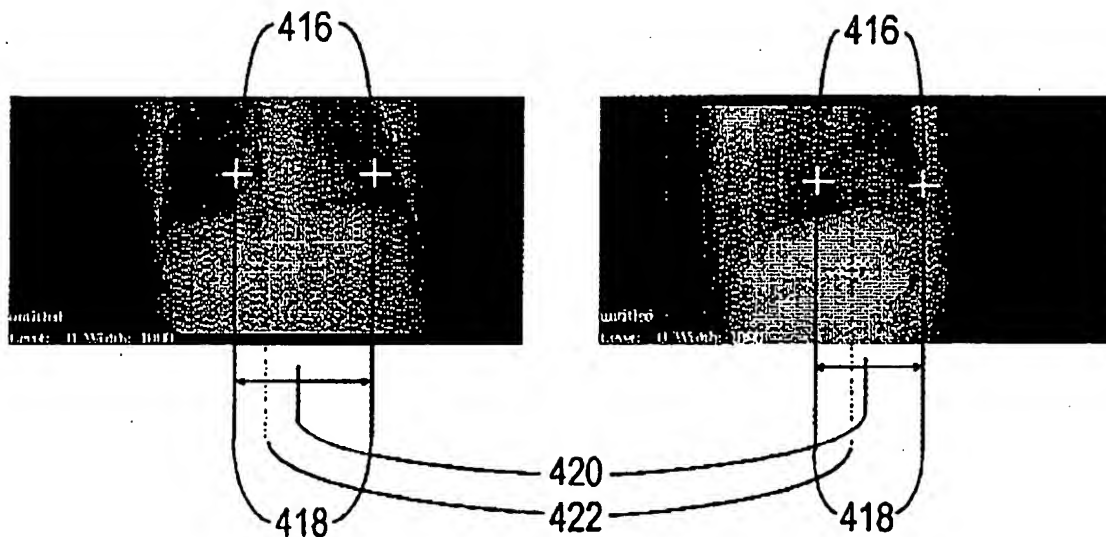


FIG. 15

**TITLE: SYSTEM AND METHOD OF DETERMINING A CENTER OF MASS OF AN IMAGING SUBJECT
FOR X-RAY FLUX MANAGEMENT CONTROL**

INVENTOR(S): Toth et al.

S/N: 10/765,583

Replacement Sheet 3 of 3

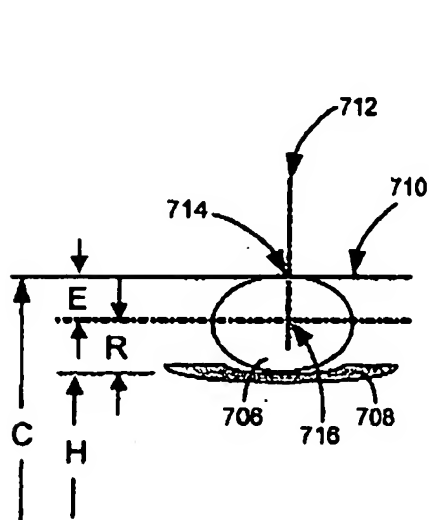


FIG. 18

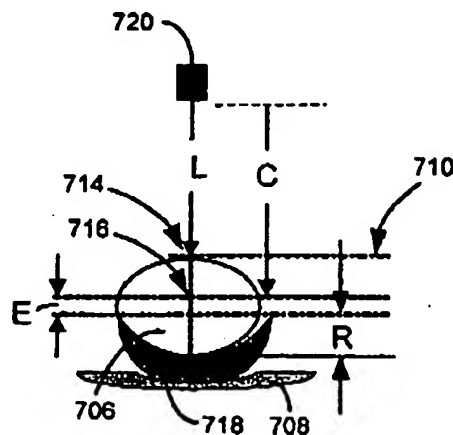


FIG. 19

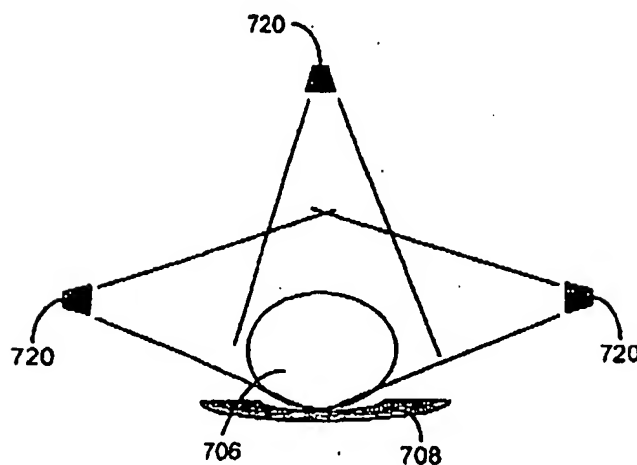


FIG. 20

Not
Approved
CK
7/1/05

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